System for Improved Reporting of Communication Center Presence Information to Prospective Clients

by inventors
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Field of the Invention

The present invention is in the field of telecommunication encompassing all existing sorts of interaction multimedia technology, and pertains more particularly to a system for reporting communication center presence and status information to customers..

Background of the Invention

In the field of telephony communication, there have been many improvements in technology over the years that have contributed to more efficient use of telephone communication within hosted call-center environments. Most of these improvements involve integrating the telephones and switching systems in such call centers with computer hardware and software adapted for, among other things, better routing of telephone calls, faster delivery of telephone calls and associated information, and improved service with regard to client satisfaction. Such computer-enhanced telephony is known in the art as computer-telephony integration (CTI). Generally speaking, CTI implementations of various design and purpose are implemented both within individual call-centers and, in some cases, at the telephone network level. For example, processors running CTI

software applications may be linked to telephone switches, service control points (SCP), and network entry points within a public or private telephone network. At the call-center level, CTI-enhanced processors, data servers, transaction servers, and the like, are linked to telephone switches and, in some cases, to similar CTI hardware at the network level, often by a dedicated digital link. CTI processors and other hardware within a call-center is commonly referred to as customer premises equipment (CPE). It is the CTI processor and application software is such centers that provides computer enhancement to a call center.

In a CTI-enhanced call center, telephones at agent stations are connected to a central telephony switching apparatus, such as an automatic call distributor (ACD) switch or a private branch exchange (PBX). The agent stations may also be equipped with computer terminals such as personal computer/video display units (PCNVDU) so that agents manning such stations may have access to stored data as well as being linked to incoming callers by telephone equipment. Such stations may be interconnected through the PC VDU by a local area network (LAN). One or more data or transaction servers may also be connected to the LAN that interconnects agent stations. The LAN is, in turn, typically connected to the CTI processor, which is connected to the call switching apparatus of the call center.

When a call arrives at a call center, whether or not the call has been pre-processed at an SCP, typically at least the telephone number of the calling line is made available to the receiving switch at the call center by the network provider. This service is available by most networks as caller-ID information in one of several formats such as Automatic Number Identification (ANI). Typically the number called is also available through a service such as Dialed Number Identification Service (DNIS). If the call

center is computer-enhanced (CTI), the phone number of the calling party may be used as a key to access additional information from a customer information system (CIS) database at a server on the network that connects the agent workstations. In this manner information pertinent to a call may be provided to an agent, often as a screen pop on the agent's PCNVDU.

In recent years, advances in computer technology, telephony equipment, and infrastructure have provided many opportunities for improving telephone service in publicly switched and private telephone intelligent networks. Similarly, development of a separate information and data network known as the Internet, together with advances in computer hardware and software have led to a new multimedia telephone system known in the art by several names. In this new systemology, telephone calls are simulated by multimedia computer equipment, and data, such as audio data, is transmitted over data networks as data packets. In this system the broad term used to describe such computer-simulated telephony is Data Network Telephony (DNT).

For purposes of nomenclature and definition, the inventors wish to distinguish clearly between what might be called conventional telephony, which is the telephone service enjoyed by nearly all citizens through local telephone companies and several long-distance telephone network providers, and what has been described herein as computer-simulated telephony or data-network telephony. The conventional systems are referred to herein as Connection-Oriented Switched-Telephony (COST) systems, CTI enhanced or not.

COST telephony is not limited to wired, or land-line systems, but may include wireless network systems as well. The purpose of the definitions here is to distinguish clearly between data-packet systems, which

share available bandwidth, and non-packet systems which use dedicated connections or channels.

The computer-simulated, or DNT systems are familiar to those who use and understand computers and data-network systems. Perhaps the best example of DNT is telephone service provided over the Internet, which will be referred to herein as Internet Protocol Network Telephony (IPNT), by far the most extensive, but still a subset of DNT. DNT systems may also include wireless sub-systems.

Both systems use signals transmitted over network links. In fact, connection to data networks for DNT such as IPNT is typically accomplished over local telephone lines, used to reach points in the network such as an Internet Service Provider (ISP). The definitive difference is that COST telephony may be considered to be connection-oriented telephony. In the COST system, calls are placed and connected by a specific dedicated path, and the connection path is maintained over the time of the call. Bandwidth is basically assured. Other calls and data do not share a connected channel path in a COST system. A DNT system, on the other hand, is not dedicated or connection-oriented. That is, data, including audio data, is prepared, sent, and received as data packets over a data-network. The data packets share network links, and may travel by varied and variable paths.

Recent improvements to available technologies associated with the transmission and reception of data packets during real-time DNT communication have enabled companies to successfully add DNT, principally IPNT, capabilities to existing CTI call centers. Such improvements, as described herein and known-to the inventor, include methods for guaranteeing available bandwidth or quality of service (QOS) for a transaction, improved mechanisms for organizing, coding, compressing, and

carrying data more efficiently using less bandwidth, and methods and apparatus for intelligently replacing lost data via using voice supplementation methods and enhanced buffering capabilities.

In addition to Internet protocol (IPNT) calls, a DNT center may also share other forms of media with customers accessing the system through their computers. E-mails, video mails, fax, file share, file transfer, video calls, and so forth are some of the other forms of media, which may be used. This capability of handling varied media leads to the term multimedia communications center. A multimedia communications center may be a combination CTI and DNT center, or may be a DNT center capable of receiving COST calls and converting them to a digital DNT format. The term communication center will replace the term call center hereinafter in this specification when referring to multi-media capabilities.

In typical communication centers, DNT is accomplished by Internet connection and IPNT calls. For this reason, IPNT and the Internet will be used in examples to follow. IT should be understood, however, that this usage is exemplary, and not limiting.

In systems known to the inventors, incoming IPNT calls are processed and routed within an IPNT-capable communication center in much the same way as COST calls are routed in a CTI-enhanced call-center, using similar or identical routing rules, waiting queues, and so on, aside from the fact that there are two separate networks involved. Communication centers having both CTI and IPNT capability utilize LAN-connected agent-stations with each station having a telephony-switch-connected headset or phone, and a PC connected, in most cases via LAN, to the network carrying the IPNT calls. Therefore, in most cases, IPNT calls are routed to the agent's PC while conventional telephony calls are routed to the agent's

conventional telephone or headset. Typically separate lines and equipment must be implemented for each type of call weather COST or IPNT.

Due in part to added costs associated with additional equipment, lines, and data ports that are needed to add IPNT capability to a CTI-enhanced call-center, companies are currently experimenting with various forms of integration between the older COST system and the newer IPNT system. For example, by enhancing data servers, interactive voice response units (IVR), agent-connecting networks, and so on, with the capability of conforming to Internet protocol, call data arriving from either network may be integrated requiring less equipment and lines to facilitate processing, storage, and transfer of data.

With many new communication products supporting various media types available to businesses and customers, a communication center must add significant application software to accommodate the diversity. For example, e-mail programs have differing parameters than do IP applications. IP applications are different regarding protocol than COST calls, and so on. Separate routing systems and/or software components are needed for routing e-mails, IP calls, COST calls, file sharing, etc. Agents must then be trained in the use of a variety of applications supporting the different types of media.

Keeping contact histories, reporting statistics, creating routing rules and the like becomes more complex as newer types of media are added to communication center capability. Additional hardware implementations such as servers, processors, etc. are generally required to aid full multimedia communication and reporting. Therefore, it is desirable that interactions of all multimedia sorts be analyzed, recorded, and routed according to enterprise (business) rules in a manner that provides seamless integration

between media types and application types, thereby allowing agents to respond intelligently and efficiently to customer queries and problems.

One challenge that is ever present in a communications center is the ability to communicate current communication center status to customers attempting to reach the center for service. Older call-centers relying on COST communication techniques simply play recorded messages, the recordings informing the customers of the status of an agent being called. More advanced communication centers, including multimedia centers, have more extensive automated services in place for interacting with customers in the event that no agents are available. Most of these services are IVR driven and inform callers of options, as well as status of those persons the callers are attempting to connect with.

Estimated call-waiting times may be determined during a call attempt and communicated to the caller through IVR interaction. The number of calls ahead of current calls may also be provided as status information. A customer must invest the time and suffer the inconvenience of placing a call to the communication center in order to receive the status information. As described above, this information is made available through IVR interaction in prior art systems. In general, a call placed into the communications center must be paid for either by the customer placing the call, or by the center itself. It has occurred to the inventor that money and center resource could be conserved by providing status information to customers without requiring a physical call to be placed to the center.

What is clearly needed is a method and apparatus for providing communication-center information, such as current agent-availability status of agents or groups of agents of a communication center without requiring customers to physically call the center for the information. Such a system would save phone costs for customers and/or agents as well as reduce

utilization requirements of communication-center interface technologies such as IVR technology.

Summary of the Invention

In a preferred embodiment of the present invention, a network-based system for enabling users of the system to obtain current agent-status information related to agents of an information-source facility connected to the network before initiating contact with the agent or agents of the information-source facility is provided. The system comprises a first server node connected to the information-source facility and to the network, a second server node connected to the first server node and to the network, the first server node accessible to the second server node, a network-capable appliance connected to the network, the second server node accessible to the network-capable appliance, and a software application distributed on at least the first and second server nodes, the software application enabling distribution of the agent-status information. The user operating the network-capable appliance accesses the second server node and requests the agent-status information, the agent-status information accessed from the first server node by the second server node and delivered to the requesting user.

In a preferred embodiment, the above-described system is implemented on the Internet network. In preferred application, the information-source facility is a communication center marketing products and or service to the users. In one aspect, the agents are human resources employed by the communication center. In another aspect, the agents are automated systems implemented at the communications center. The agent-status information, in a preferred embodiment, includes a description of the

agent and or agent's capabilities, the number of calls waiting in the agent's or agents' queue or queues, and an estimated time for response by the agent or agents. In one aspect, the number of calls waiting information and the estimated time for response information is averaged over a group of agents. In another aspect, the number of calls waiting information and the estimated time for response information is specific to a single agent. In some aspects, the agent-status information delivered to the requesting user is specific to the request initiated by the user. In one embodiment, the agent-status information automatically updates periodically during a user session. In another embodiment, the agent-status information is continually streamed to the requesting user during session.

In one aspect of the system, agent-status information is pulled from the first server node by the second server node according to the user's request. In another aspect, the agent-status information is pushed to the second server node by the first server node and is available to be pulled by the user. In some embodiments, the software application uses instant message technology in the transfer of agent-status information. In another embodiment, the software application uses streaming technology in the transfer of agent-status information. In still other embodiments, the software application embeds the agent-status information into a Web page requested by the user. In one aspect, the functions of the first and second server nodes are implemented within a single server node connected to the communications center, the network, and accessible to the network-capable appliance.

In another aspect of the present invention, a method for enabling users connected to a network to obtain current agent-status information related to agents of an information-source facility connected to the network before initiating contact with the agent or agents of the information-source

facility is provided. The method comprises the steps of (a) periodically compiling and preparing the agent-status information at the information-source facility, (b) rendering the compiled agent-status information available in a network-connected server and (c) serving the agent-status information or a portion thereof to network-connected users over a network path upon request.

In a preferred embodiment, the method is practiced on the Internet network. In one aspect of the method in step (a), the information-source facility is a communication center. In this aspect, the communication center markets products and or service to the users. In another aspect of the method in step (a), the agent-status information specifies the current status of human resources employed by the communication center. In some cases, in step (a), the agent-status information specifies the current status of automated systems implemented at the communications center. In preferred applications of the method in step (a), the agent-status information is compiled using agent-monitoring software. In preferred application of the method in step (a), the agent-status information includes a description of the agent or agent's capabilities, the number of calls waiting in the agent's or agents' queue or queues, and an estimated time for response by the agent or agents. In some applications, the number of calls waiting information and the estimated time for response information is averaged over a group of agents. In other applications of the method the number of calls waiting information and the estimated time for response information is specific to a single agent. In preferred application of the method, the agent-status information delivered to the requesting user is specific to the request initiated by the user.

In one application of the method in step (b), the agent-status information is automatically updated periodically at the network connected-

server. In another application of the method in step (c), the agent-status information is continually streamed to the requesting user over the network path during session. In still another application in step (c), the agent-status information is served using an instant message technology. In preferred application in step (c), there are more than one server node in line on the network path, the server nodes hosted by the communications center.

Now, for the first time a method and apparatus for providing current agent-availability status of agents or groups of agents of a communication center without requiring customers to physically call the center for the information is provided. Such a system saves phone costs for customers and/or agents as well as reduces utilization requirements of communication-center interface technologies such as IVR technology.

Brief Description of the Drawing Figures

Fig. 1 is an overview of a communication network wherein reporting of communication-center presence information is practiced according to an embodiment of the present invention.

Fig. 2 is a plan view of a client-side media-interface containing status information according to an embodiment of the present invention.

Fig. 3 is a flow diagram illustrating client and system procedural steps for practicing communication-center presence reporting according to an embodiment of the present invention.

Description of the Preferred Embodiments

In accordance with a preferred embodiment of the present invention, the inventor provides a novel software-hardware driven system for improving the reporting of communication-center presence information to prospective communication-center clients. The method and apparatus of the present invention is described in enabling detail below.

Fig. 1 is an overview of a communication network 52 wherein reporting of communication-center presence information is practiced according to an embodiment of the present invention. Communication network 52 comprises, in this example, a public-switched-telephone network (PSTN) 55, a data-packet-network (DPN) 61, a communication center 21, and an exemplary user 9.

PSTN 55, in this example, represents a preferred network connecting all connection-oriented-switched-telephony (COST) clients who call into communication center 21 for the purpose of doing business with the center. In another embodiment, a private telephone network may be utilized in place of or in combination with PSTN 55. The inventor chooses PSTN 55 because of its high public-access characteristic.

A local telephony switch (LSW) 59 is illustrated within PSTN 55 and represents automated switching capability within the network. LSW 59 may be an Automatic Call Distributor (ACD), a Public Branch Exchange (PBX), or any other type of telephony switching apparatus, in the broadest sense, including but not limited to DNT type switches/gateways as used in VoIP etc. LSW 59 is enhanced for computer-telephony-integration (CTI) by a CTI processor 62 connected thereto by a CTI connection. LSW 59 and CTI processor 62 may encompass various communication functionalities made available at network level by communication center 21. For example, an

instance of CTI software known to the inventor and termed Transaction Server (TS) is provided within CTI processor 62 and adapted to enable communication-center 21 to certain call-switching and routing aspects performed by LSW 59.

LSW 59 is connected to a central telephony switch (CSW) 53, illustrated within communication center 21, by a COST telephony trunk 57. CSW 53 may be any one of several types of call processing switches as previously described with respect to LSW 59 above.

CSW 53 is enhanced by a CTI processor 65, which is connected thereto by a CTI connection as was described with reference to LSW 59. CTI processor 65 also has an instance of TS software provided therein and adapted to communicate with TS software of processor 62. Processors 62 (network) and 65 (communication center) are connected by virtue of a separate data network 64 enabling the above-described communication between TS instances. By using network 64 to connect processor 62 and 65, communication center 21 may, in addition to controlling call switching and routing within PSTN 55, receive information about callers ahead of actual calls arriving at CSW 53 for internal processing. This enhancement is known as double-dipping by the inventors.

DPN 61 is, in this example, the well-known Internet network and will hereinafter be termed Internet 61. Internet 61 facilitates all Internet-protocol (IP) callers reaching communication center 21 through the Internet. Internet 61 may instead be a private or corporate Wide Area Network (WAN), or any other type of DPN as long as Internet communication protocols are supported. The inventor chooses Internet 61 as a preferred network because of it's high public-access characteristic. IP callers calling into communication center 21 may interface from any Internet-connected server, which provides network access to communication center 21. Moreover,

there may be many such servers distributed throughout network 61, each server being a point of access.

Internet 61 has an Internet backbone 13 illustrated therein. Backbone 13 represents all the lines, equipment, and connection points making up the Internet network as a whole, including sub networks. A Web Server (WS) 15 is provided within Internet 61 and is connected to backbone 13. WS 15 is adapted as an Internet file server as is known in the art. WS 15 represents one of a possible plurality of distributed customer-interfacing servers as described above. WS 15 serves electronic information pages, termed Web pages in the art, to requesting users. WS 15 is in this example hosted by the entity hosting communication center 21 and is utilized as a customer-interfacing server.

WS 15 is enhanced with a software instance termed Web-Presence-Software (WPS) 16, which enables prospective customers of communication-center 21 to view communication-center status related to agent availability for a call before deciding whether or not to actually place a call to communication center 21. More about WPS 16 is provided later in this specification.

An exemplary user, illustrated herein as a PC icon labeled with the element number 9, is connected to Internet backbone 13 by virtue of an Internet connection-line 11. User 9 is assumed, in this example, to be accessing WS 15 through standard Internet-connection capabilities as are known in the art. Typically, user 9 would obtain access to WS 15 through a dial-up connection utilizing an Internet-service-provider (ISP) and PSTN 55. However, there are many other means which may be used to obtain an Internet session with WS 15, many of which may not require dialing, e.g. DSL, cable modems etc. User 9 may utilize some other Internet-capable appliance than the PC illustrated herein. Likewise, connection line 11 may

be a wireless link, a cable-modem connection, or any other known Internet connection means.

An instance of software termed Customer-Presence-Software (CPS) 10 is provided to execute on customer-premise-equipment (CPE), which in this case is a PC operated by user 9. CPS 10 is adapted to integrate communication-center status information into a customer's electronic interface, which is typically an electronic-information-page (Web page) served to the customer by WS 15 upon the customer's request. CPS 10 is an optional implementation in this example and is described in more detail later in this specification.

Communication center 21 has an Internet Protocol Router (IPR) 25 illustrated therein and adapted to handle incoming communication events sourced from WS 15 or any other interfacing Web server over network connection 19. IPR 25 routes incoming events to agent workstations adapted to receive the events. Agent workstations 27, 29, and 31 are illustrated within communication center 21 and adapted for communication-center activity covering both IP and COST transactions.

Agent telephones 39 (workstation 27), 41 (workstation 29), and 37 (workstation 31) are provided to handle COST communication events. Telephones 39, 41, and 37 are connected to CSW 53 by internal telephony wiring 45. Each agent workstation 27, 29, and 31 has a personal computer/video-display unit (PC/VDU) provided therein and adapted for handling IP communication events and for receiving information about callers calling from PSTN 55. These are PC/VDU 33, PC/VDU 35, and PC/VDU 43 respectively.

PC/VDU's 39, 35, and 43 are connected to a Local-Area-Network (LAN) 23. LAN 23 is, in this case, enhanced for Internet communication. IPR 25 is connected to LAN 23 and functions as an event router as

previously described above. Other equipment may also be connected to LAN 23 such as a customer information server (CIS), a statistical server, and other communication-center systems and equipment not shown here but assumed to be present. Processor 65 is connected to LAN 23 by a LAN connection 67. In this way, information about COST callers being handled at LSW 59 may be routed over LAN 23 to destination PC/VDUs such as PC/VDU 35 in station 29 for example. Information about COST callers can also be handled by CSW 53 and routed over LAN 23 to destinations.

It will be apparent to one with skill in the art, that there may be many more workstations manned by communication-center agents than are illustrated in this embodiment without departing from the spirit and scope of the present invention. Similarly, there may be many more CTI functions represented herein without departing from the spirit and scope of the present invention. For example, IVR capability may be present at LSW 59, as well as at CSW 53. Automated systems such as automated fax systems and e-mail systems may also be present. There are many possibilities.

A status server 49 is provided within communication center 21 and adapted to monitor agent status and availability for receiving incoming communication events. Status server 49 is connected to LAN 23 by virtue of a LAN connection and monitors status at each workstation 27-31. Software used for this purpose is not illustrated in this embodiment, but may be assumed to be present and operational within server 49. Agents manning stations 27-31 may monitored as to how many calls are in their respective queues whether they are COST queues, IP queues, or virtual queues of either type. Estimated waiting times for each queue of each agent are determined using call-handling statistics available within center 21. The information gathered to be made available t users may also be more extensive in scope, involving status of groups of agents and the like. Server

49 is capable of monitoring the status of each agent in real-time, but for practical purposes, may perform periodic status checks on a frequent basis such that real-time parameters are closely emulated. All current status information for every agent logged on to LAN 23 is compiled by server 49 and maintained as long as it is current.

An instance of Communication-Center-Presence Software (CCPS) 50 is provided within server 49 and adapted to interface with agent-monitoring software per instance of client request initiated through WS 15. Status server 49 is, in this embodiment connected directly to WS 15 by a separate high-speed data link 20. This implementation is not specifically required to practice the present invention, however the presence of link 20 enhances server-to-server communication. In the absence of data link 20, all communication between WS 15 and status server 49 would be conducted over Internet connection line 19, through IPR 25, and over LAN 23.

In practice of the present invention in one preferred embodiment, user 9 accesses Internet 61 over Internet connection line 11 and logs into WS 15. WS 15 serves a Web page as a response to a request from user 9. The Web page requested is hosted by the entity hosting communication center 21 and therefore contains information about communication center 21 including contact links, product information, telephone numbers, and any other pertinent information that may be found on a customer interface. In addition to the more typical information contained in the Web page representing communication center 21, a Web form (not shown) is made available for the purpose of taking a user's status request before requiring the user to place an actual call or initiate any contact with center 21.

The Web form, which is part of WPS 16, allows a user to enter such information as a product description, profile information, or a purpose for the desired contact with communication center 21. WPS 16, upon receiving

and registering a request from user 9 sends an instant message/request over high-speed data link 20 to status server 49. CCPS 50 parses the request and obtains the most current status information from server 49 that matches the intent of the request. For example, if user 9 desires to purchase a four-wheel drive pickup, and communication center 21 is a car dealership, then CCPS 50 will only obtain status information connected to those agents within center 21 responsible for four-wheel drive sales.

Once status information is obtained by server 49, it is sent in the form of a response from server 49 to WS 15 whereupon it may be made available to user 9. In another embodiment, the status response may be sent to user 9 along with a subsequent Web page whereupon the information is caused to be a part of the web page at the location of user 9. In this case, CPS 10 would incorporate the information into the display of the subsequent Web page.

In still another embodiment, CCPS 50 may obtain all of the current agent-status information available from communication center 21 and send it to WS 15 over link 20 on a periodic or real-time basis. WPS 16 would, in this case, the enhanced with a filtering capability of filtering status information that closely matches a user request. Also in this case, an instant message would not need to be sent from WS 15 to status server 49.

In a simple embodiment, status information viewable by user 9 would include any listed agents, number of calls in their queues, and estimated time waiting for agent availability with respect to each queue. For example, agent JIM may have 5 COST calls waiting, 5 IP calls waiting, and 8 unanswered e-mails. Therefore, agent Jim may be considered unavailable for immediate service. An estimated time waiting for Jim to respond may be averaged over all his media types, or maybe specified for each media type. User 9 may initiate a refresh action in order to obtain an update of status information.

Contact links and other options may be presented in association with listed agents and agent status figures.

An interface of the type described above enables users to essentially browse agent-availability statistics before initiating any type of contact with communication center 21. In the event that a response message or downloaded interface reveals an available agent, user 9 could initiate contact with that agent using provided contact links or information.

It will be apparent to one with skill in the art that there are many configuration possibilities that exist with respect to reporting agent-availability status of agents within communication center 21 to requesting user 9 without departing from the spirit and scope of the present invention. Instant messaging or embedding the information into Web pages before or after download are techniques which may be employed to practice the present invention. Likewise, the status information may be made a part of a Web browser's tool bar or caused to open in an interactive window that pops up on a user's screen when the data is ready for display. In still another embodiment user station 9 may contact IPR 25 via connection 11, 13, 19 and retrieve pertinent information maintained through CCPS 50. This data may be displayed independently or integrated with a Web page from server 15. The functionality of WPS 16 at Web server 15 in retrieving information from communication center 21 via CCPS 50 is but a single example of how a system according to the present invention may function. It has been described that similar functionality may be provided by CPS 10 at a client station, and that there is no limitation to the client station operating only through a Web server. In a broad sense, the means of communication of client station 9 with communication center 21 is not limiting to the invention. The cooperation of gathering software (CCPS 50) at a communication center with an interface software (CPS 10) at a client station is novel.

In a further aspect, there are a variety of ways that the client stations in such a system may become enabled. In the system wherein retrieval of communication center status info is by software (WPS 16) at server 15, there is no need for additional software at the client station. A conventional browser will do. In the cases wherein software CPS 10 is enabled at a client station, that software may be sent to a client on a CD (for example), sent to the client in the background on accessing a Web page at server 15, downloaded intentionally by a client at station 9 as a plug-in to a Web browser, and in other ways as well.

Fig. 2 is a plan view of a client-side media-interface 69 that contains status information according to an embodiment of the present invention. Interface 69 is an exemplary representation of a customer interface displaying agent-availability status after it has been requested and delivered. Interface 69 may be an integrated part of a Web page (incl. e.g. script, Java, Java script, X-Windows script, plug-in etc. etc.), a pop-up information window, an instant message interface, or any other mechanism of computerized display.

In one embodiment, interface 69 is a product of CPS 10 of Fig. 1. In this embodiment, WPS 16 of Fig. 1 sends agent-availability information to user 9 over Internet connection 11, 13, 19, and CPS 10 incorporates information into an interactive display-window or into the actual Web page served by server 15. In another embodiment, interface 69 is a product of WPS 16 in Fig. 1 and is embedded into the actual Web page before it is served to user 9. In still another embodiment, interface 69 is a product of WPS 16 and is served to user 9 in the form of a standard instant-message interface using any of several known protocols.

In this basic example, agent-availability status is generalized to a group of agents and displayed as 3 parameters. These are a number of

available agents 71, a number of calls waiting 73, and an estimated hold time 75. In this case the information represents the most basic information available for the target group of agents. In this case there are 12 available agents that are handling the subject of request resulting in interface 69. There are 25 calls waiting in a queue shared by the 12 available agents. The average estimated hold time for one of the 12 agents to respond to an immediately placed call is 2 minutes and 10 seconds.

In this example, three interactive options are presented within interface 69, in this case, below the agent-availability information. A contact option 72 is provided to allow a viewing customer to initiate an IP-to-IP telephone call, or an IP-to-COST telephone call. A contact option 74 enables a viewing customer to send an e-mail, which would be routed to one of the 12 available agents. A contact option 76 enables a viewing customer to initiate a callback from one of the 12 available agents. Using callback option 76 enables an invoking user to be entered into a virtual queue. A user in this case may expect a callback at approximately 2 minutes and 10 seconds after initiating the contact. In actual practice, the availability and variety of interactive contact options is dependent upon enterprise rules and available media. One with skill in the art will recognize that there are many alternative display scenarios which may be used with interface 69.

In a more advanced case, interface 69 may contain much more detailed information including information that a specific to a user request invoking the interface. For example, each of the available agents 71 may be listed separately instead of collectively as illustrated herein. The number of calls waiting may be broken down to reflect the exact number of calls waiting for each available agent. Furthermore, estimated hold times may be determined individually for each busy agent. Likewise, additional information about agents may be listed such as skill levels, language

preferences, ranking within the organization, and so on. The level at which detailed agent-availability data may be compiled and presented depends entirely on the sophistication and configuration of agent monitoring software in use within communication center.

Fig. 3 is a flow diagram illustrating client and system procedural steps for practicing communication-center presence reporting according to an embodiment of the present invention. At step 77, the user logs onto a DPN, which in a preferred case, is the Internet network. At step 79, the user of step 77 navigates to a Web site hosted by a communication center that the user desires to contact. At this point, a Web form may be present on a main Web page of the Web site navigated to in step 79. Such a Web form would prompt a user for his or her intent or reason for the desired contact. These reasons are as wide-ranging as are enterprises that might host such a Web form. For example, a list of product descriptions may be presented for selection. Levels of contact priority may be established in the case of priority queuing, amongst others possibly based on user ID. Available options are limited only by enterprise rules.

At step 81, a user enters the information solicited from him or her by the above-described Web form. At step 83, the user submits the Web form. At step 84, a Web presence server analogous to Web server 15 of Fig. 1 receives the request sent by the user of step 83. At step 85, the Web presence server forwards the request received in step 84 to a communication-center presence server analogous to server 49 of Fig. 1.

At this point, software analogous to CCPS 50 of Fig. 1 analyzes the received request and pulls the most current agent-availability data for the purpose of servicing the request. At step 86, the applicable data is sent in the form of a response back to the Web presence server of step 85. It is noted herein, that this communication between servers may occur over a

separate high-speed data line as was described in reference to figure 1 above. Moreover, the server-to-server transaction may follow known request/response models used in Internet transactions.

When the applicable data is received at the Web presence server, software analogous to WPS 10 of Fig. 1 may integrate the information into a subsequent Web page to be sent back to the user of step 77, or it may formulate the response as an instant message, which is immediately dispatched act to user 77. At step 87 then, the applicable data is delivered to the user of step 77 and is displayed as an interactive interface analogous to interface 69 of Fig. 2 at step 89. At this point, the user of step 77 may initiate contact with the target communication center or wait for a better time for contact initiation based on user-analysis of the received data. It is also noted herein that the user requesting the data may refresh his or her request periodically to obtain the most current agent-availability data during a session period. In some cases, the requesting user may receive streaming data in real-time showing continual changes in agent-availability status over the time spent viewing the interface.

It will be apparent to one with skill in the art, that the customer/system process steps illustrated in this example may be altered in description and order without departing from the spirit and scope of the present invention. For example, the Web presence server of step 84 may have a local access to the most current agent-availability data at the instant of receiving a request. This was described an embodiment wherein agent-availability data from the target communication center is periodically pushed or continually streamed to the Web presence server. Moreover, the agent-availability data may be integrated into a Web page at server side or client side dependent upon software implementation. In one embodiment, the

entire transaction process from request to response and display is conducted using an instant message protocol.

The method and apparatus of the present invention may be practiced on the Internet, a private or corporate WAN or LAN network or in any combination thereof. Web server 15 of Fig. 1 may be hosted by a single communication center or shared by a plurality of communication centers. In the latter case, it is more likely that agent-availability data will be pulled from the providing communication centers rather than pushed to the central location. The method and apparatus of the present invention encompasses the wide range of varying implementations and therefore should be afforded the broadest scope under examination. The spirit and scope of the present invention is limited only by the claims that follow.